SERVICE MANUAL

GAS COMBI OVENS

VC10HGP SHOWN

MODEL	ML
VC10FGP	52444
VC10HGP	52441
VC20HGP	52442

- NOTICE -

This Manual is prepared for the use of trained Vulcan Service Technicians and should not be used by those not properly qualified. If you have attended a Vulcan Service School for this product, you may be qualified to perform all the procedures described in this manual.

This manual is not intended to be all encompassing. If you have not attended a Vulcan Service School for this product, you should read, in its entirety, the repair procedure you wish to perform to determine if you have the necessary tools, instruments and skills required to perform the procedure. Procedures for which you do not have the necessary tools, instruments and skills should be performed by a trained Vulcan Service Technician.

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GENERAL

INTRODUCTION

The procedures in this manual apply to all models unless specified otherwise.

The gas combi oven models:
- Comes in two heights - 10 & 20.
- Comes in two depths - Half / Full.
- Has a programmable control - P.

LUBRICATION

Fan motor has sealed bearings and requires no additional lubrication.
Fan motor shaft seal requires lubrication at replacement.

CLEANING

Overall cleanliness is important to the operation of the oven, special care should be given to the boiler to prevent premature failure and malfunctions of components.
Detailed instructions are included in Operation Instructions Manual.

TOOLS

Standard
- Standard set of hand tools.
- Metric set of hand tools.
- VOM with AC current tester (any quality VOM with a sensitivity of at least 20,000 ohms can be used).
- Gear puller (to remove fan).
- Temperature tester (thermocouple type).
- Manometer

Special
- Red High Temperature RTV (544313 or 542949) for door seal and probes.
- Grounding kit (protects control board if handled)
- Motor Shaft Centering Tool (359450)
- White silicone grease (545832) for motor shaft seal

SPECIFICATIONS

Electrical 120/60/1

Gas Supply: Natural - 7"W.C. Propane - 11"W.C.
Fresh Air: 2"W.C.
BTU

MODEL	GAS TYPE	OVEN	BOILER	TOTAL
10 Level Half depth	Natural	67,000 BTU/hr	40,000 BTU/hr	107,000 BTU/hr
	Propane	69,000 BTU/hr	40,000 BTU/hr	104,000 BTU/hr
10 Level Full depth	Natural	85,000 BTU/hr	45,000 BTU/hr	130,000 BTU/hr
	Propane	70,000 BTU/hr	45,000 BTU/hr	115,000 BTU/hr
20 Level Half depth	Natural	70,000 BTU/hr	58,000 BTU/hr	128,000 BTU/hr
	Propane	70,000 BTU/hr	58,000 BTU/hr	128,000 BTU/hr

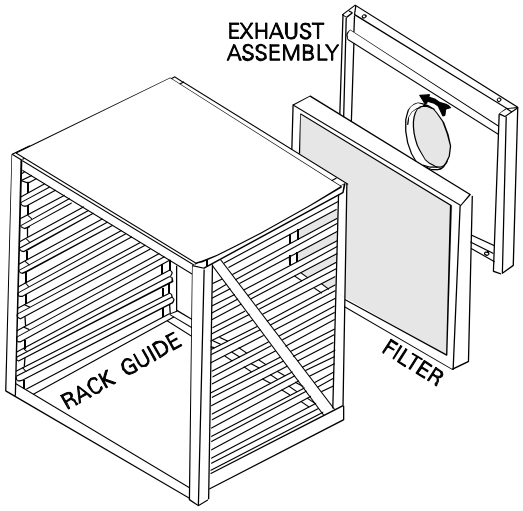
Water Hardness - 5.0 grains hardness/gallon Pressure - Range: 7.25 to 87 psig
PH - 6.5 to 8 Supply line in-line strainer.

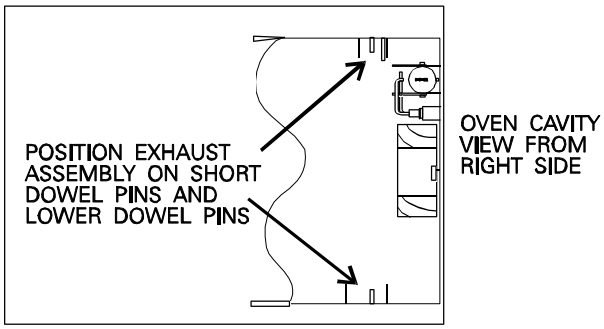
REMOVAL AND REPLACEMENT OF PARTS

RACK GUIDE/ FILTER /EXHAUST ASSEMBLY

1. Turn the oven off.
2. Remove the racks (if equipped).
3. Push the rack guide to rear of oven to remove the rack guide tabs from from slots in the exhaust assembly (10 level).
4. Lift the rear of the rack guide up and pull the guide out of the oven cavity.
5. Lift the filter up, then pull forward to remove the filter (2 filters for 20 level).
6. **WARNING:** DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.
7. 20 level only. Loosen the wing nuts and lower the filler panel at the top of the exhaust assembly.
8. Lift up on exhaust assembly then pull forward at bottom to clear the dowel pins.
9. After lower dowel pins have been cleared, remove assembly from top pins and remove from oven.
10. Reverse procedure to install.

    NOTE: Be sure the bottom of the exhaust assembly is seated on the dowel pins and fan direction arrow is pointing to left (facing oven).





TSP1021C

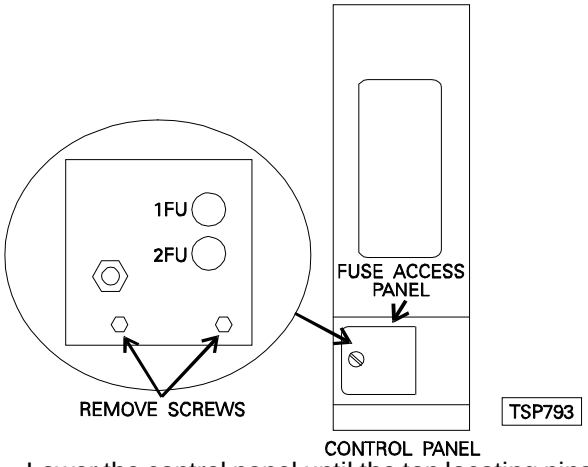
COVERS AND PANELS

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX AND SHUT THE WATER SUPPLY AND GAS VALVE OFF. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

Control Panel (10 Level)

1. Open the door.
2. Remove fuse access panel.
3. Remove 2 screws that secure the control panel while holding the control panel in place.

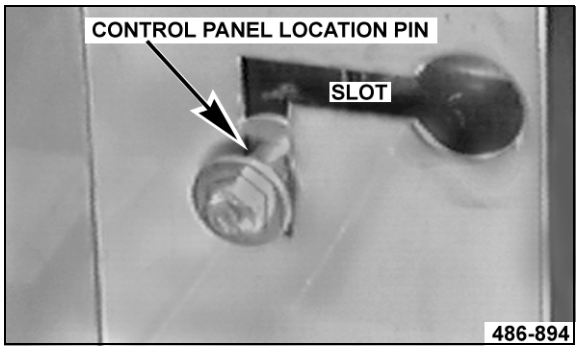
   CAUTION: The control panel will fall and could be damaged if not held during removal.



4. Lower the control panel until the top locating pins are clear of the locating holes.
5. Hang the control panel by the chain.
6. Disconnect the probe lead wires, ribbon cable, door switch lead wires and the chain.
7. Reverse procedure to install and adjust as outlined under "OVEN DOOR ADJUSTMENT" in "SERVICE PROCEDURES AND ADJUSTMENTS"."

Control Panel (20 Level)

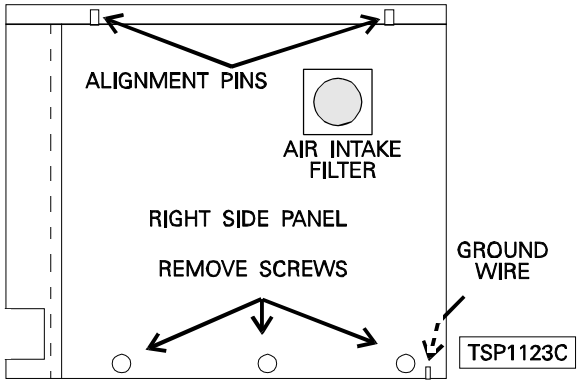
1. Open the door.
2. Remove fuse access panel and remove the screw holding the control panel.
3. Lower the control panel, when the location pin is aligned with the slot, move forward .



4. Remove the panel from the oven and let hang by the chain.
5. Disconnect the probe lead wires, ribbon cable, door switch lead wires and the chain.
6. Reverse procedure to install and adjust as outlined under "OVEN DOOR ADJUSTMENT" in "SERVICE PROCEDURES AND ADJUSTMENTS".

Right Side Panel

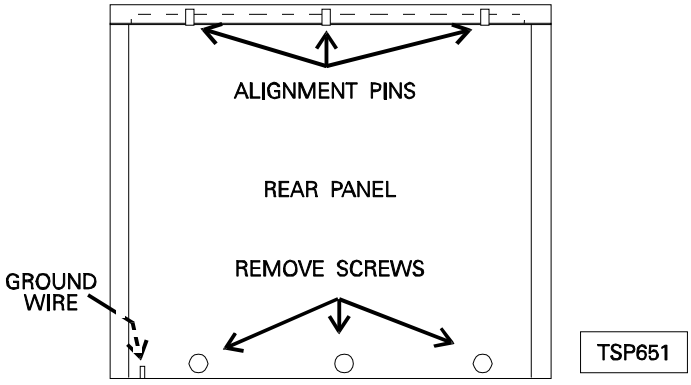
1. Remove 3 screws along the bottom of the panel. (10 Level)
2. Pull the rear corner away from the oven and disconnect the ground wire from the panel.
3. With the rear corner pulled out to help clear the air intake filter from the motor, slide the panel to the rear.
4. Lower the panel while pulling to the rear, to clear alignment pins.



5. Reverse procedure to install.

Rear Panel

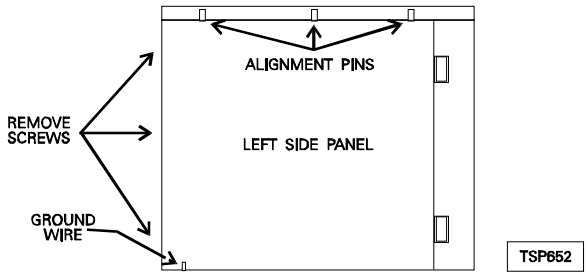
1. Remove 3 screws along the bottom of the panel.
2. Pull the left rear corner away from the oven and disconnect the ground wire from the panel.
3. Lower the panel to clear alignment pins and remove from the oven.



4. Reverse procedure to install.

Left Side Panel

1. Remove the rear panel as outlined under “COVERS AND PANELS”.
2. Disconnect the ground wire and remove the screws from the rear of the panel.
3. Slide the panel to the rear to remove the front edge of the panel from behind the front panel.
4. Lower the panel to clear alignment pins and remove from the oven.

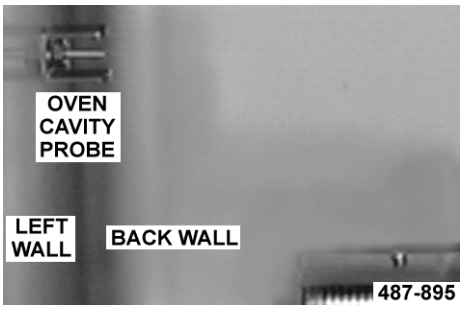


5. Reverse procedure to install.

OVEN TEMPERATURE PROBE

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

1. Remove the rack guide, filter and exhaust assembly as outlined under “RACK GUIDE/ FILTER/EXHAUST ASSEMBLY”.
2. Remove the right side and rear panels (plus left side panel for 20 level) as outlined under “COVERS AND PANELS”.
3. Remove the retaining nut from the probe inside the oven.



20 LEVEL SHOWN

4. Remove probe through the rear (left side for 20 levels) of the oven cavity.

   NOTE: Use high temperature silicone between the probe and the hole in the oven cavity wall.
5. Disconnect the probe leads from the control board.
6. Reverse procedure to install.

CONTROL BOARD

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

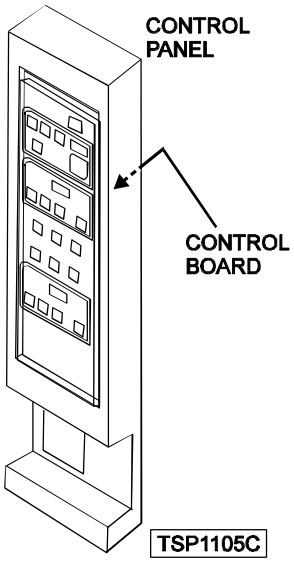
CAUTION: Certain components in this system are subject to damage by electrostatic discharge during field repairs. A field service ground kit is available to prevent damage. The field service grounding kit must be used anytime the control board is handled.

10 Level

1. Remove the control panel from the oven as outlined under “COVERS AND PANELS”.

2. Remove the screws from the control panel as outlined under “COVERS AND PANELS”.

3. Remove the cover from the control panel and remove the control board.



4. Reverse procedure to install.

20 Level

1. Remove the right side panel as outlined under “COVERS AND PANELS”.

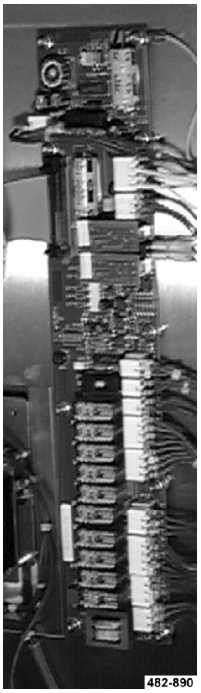
2. Remove the cover from the back of the control board and disconnect the wire leads.

3. Remove the control board from the control panel.

4. Reverse procedure to install.

RELAY BOARD

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.



CAUTION: Certain components in this system are subject to damage by electrostatic discharge during field repairs. A field service ground kit is available to prevent damage. The field service grounding kit must be used anytime the control board is handled.

1. Remove the right side panel as outlined under “COVERS AND PANELS”.

2. Disconnect lead wires from the relay board.

3. Remove the screws that secure the relay board.

4. Reverse procedure to install.

BLOWER AND MOTOR

Removal

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

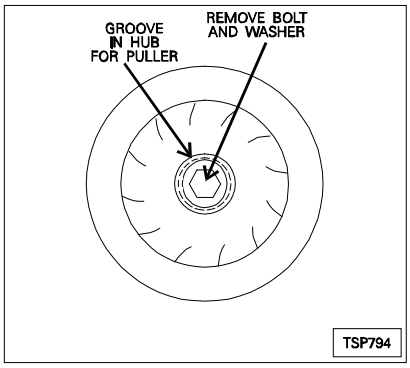
1. Remove the rack guide, filter and exhaust assembly as outlined under “RACK GUIDE/ FILTER/EXHAUST ASSEMBLY”.

2. Loosen bolt (one turn) that secures the blower and install puller.

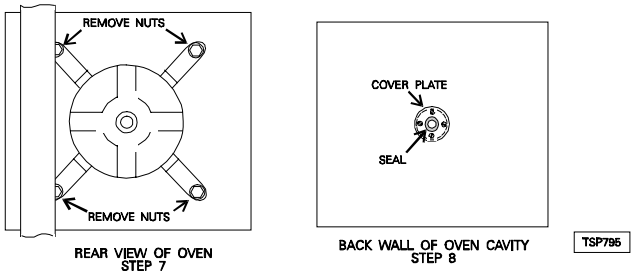
3. Tighten the puller, then tap the puller with a hammer to loosen the blower from the motor shaft.

4. Remove the bolt, washer and blower from the motor shaft.

   NOTE: If only the blower is being removed, reverse the procedure at this point.



5. Remove the rear panel as outlined under “COVERS AND PANELS”.
6. Disconnect the lead wires from the motor.
7. Remove the motor from the back of the oven.
8. Remove the cover plate and seal from inside the oven cavity.

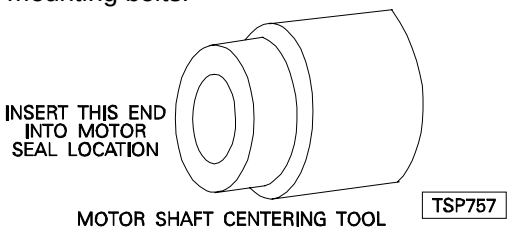


   NOTE: You may have to drive the seal out from the back.

Installation

1. Mount the motor to the back of the oven. Tighten the bolts enough to hold the motor in place, but allow some movement.

2. Ensure that the motor shaft is centered (use shaft centering tool) in the motor shaft hole and tighten mounting bolts.



3. Remove the shaft centering tool.

4. Connect the lead wires to the motor.

5. Install seal and cover as outlined under “BLOWER MOTOR SHAFT SEAL”.

CAUTION: Remove all traces of motor seal grease from the motor shaft.

6. Install the blower wheel.

7. Install exhaust assembly, filter, and rack guide as outlined under “RACK GUIDE/FILTER/EXHAUST ASSEMBLY”.

8. Install rear panel as outlined under “COVERS AND PANELS”.

BLOWER MOTOR SHAFT SEAL

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

1. Remove blower as outlined under “BLOWER AND MOTOR”.

2. Remove motor seal cover plate.

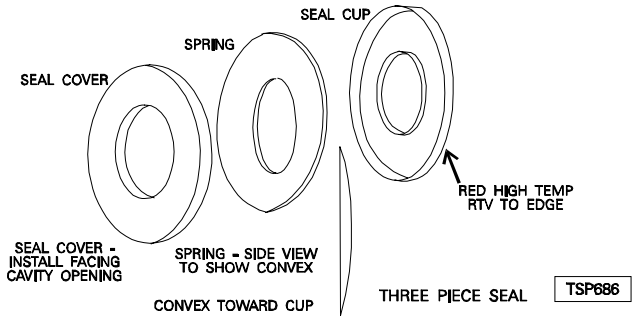
3. Pry the seal from the recess in the rear oven wall.

4. Fill replacement seal cover with white silicone grease.

5. Assemble the motor seal with the convex part of the spring toward the motor.

6. Apply red high temperature RTV to the outer edge of the seal to help hold it in the recess and install the seal with the seal cover toward the oven cavity opening.

   CAUTION: Remove all traces of motor seal grease from the motor shaft.



7. Install the seal cover.

8. Install exhaust assembly, filter, and rack guide as outlined under "RACK GUIDE/FILTER/EXHAUST ASSEMBLY ".

CAVITY BURNER

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

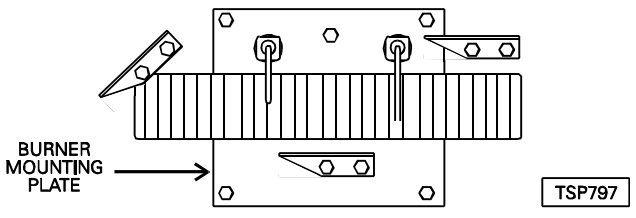
1. Remove the rack guide, filter and exhaust assembly as outlined under "RACK GUIDE/ FILTER/EXHAUST ASSEMBLY".

2. Remove rear panel as outlined under "COVERS AND PANELS".

3. Remove the spark ignitor and the flame sensor from the oven cavity.

4. Remove the bolts from the gas pipe flange on the rear of the oven.

5. Inside the oven cavity, remove the nuts securing the burner.



CAVITY BURNER ASSEMBLY

6. Remove the burner from inside oven cavity.

   NOTE: Seal the burner mounting plate with high temperature sealant.

7. Install the spark ignitor and flame sensor and adjust as outlined under "ELECTRODE ADJUSTMENT" in "SERVICE PROCEDURES AND ADJUSTMENTS".

ORIFICE (CAVITY BURNER)

WARNING: SHUT THE GAS OFF TO THE UNIT.
WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

1. Remove the back panel as outlined under "COVERS AND PANELS".

2. Disconnect the gas line at the gas/air tube.

3. Remove the gas valve from the inlet line.

4. Remove the orifice from the holder.

   NOTE: Always replace the fiber washer in the pipe fittings.

5. Reverse procedure to install.

BALL VALVE

WARNING: SHUT THE GAS OFF TO THE UNIT.
WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

1. Remove the right side and rear panels as outlined under "COVERS AND PANELS".
2. Remove the air intake motor.
3. Remove the ball valve motor as outlined under "BALL VALVE MOTOR", but do not disconnect the lead wires. You can place the motor to the side.
4. Remove the cavity burner gas valve.

5. Disconnect the gas/air line at the back of the oven cavity.
6. Remove the ball valve from the gas/air line.

7. Reverse procedure to install.

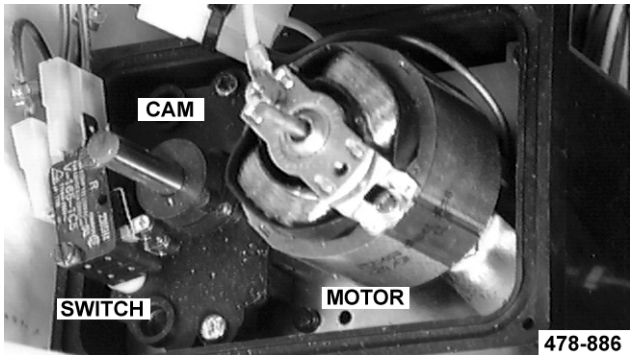
BALL VALVE MOTOR

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

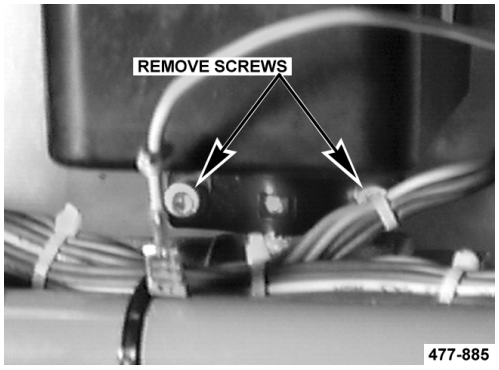
1. Remove the rear panel as outlined under “COVERS AND PANELS”.

2. Disconnect the lead wires from the motor and switches.

3. Remove the motor and switch assembly from the unit.



4. Remove the bolts from the clamp that connects the motor to the ball valve.



5. Reverse procedure to install.

WATER LEVEL PROBES

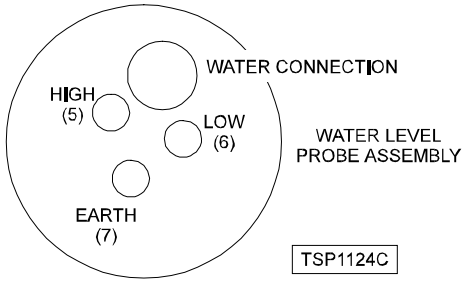
1. Turn the unit off and allow the boiler to drain.

2. **WARNING:** DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

3. Turn water supply off.

4. Remove the rear panel as outlined under “COVERS AND PANELS”.

5. Disconnect the lead wires to the water level probes.



6. Remove the hose from the water level regulator.

7. Remove the probe assembly from the top of the water level regulator.

8. Reverse procedure to install.

BOILER DRAIN PUMP

1. Turn the unit off and allow the boiler to drain.

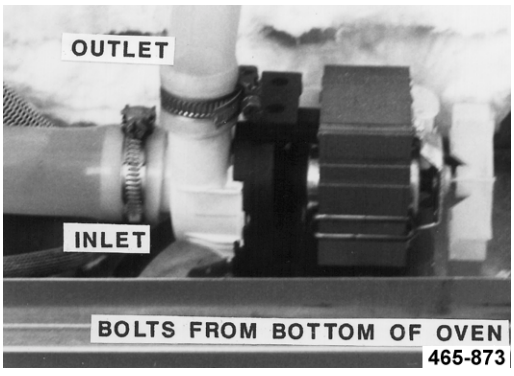
2. **WARNING:** DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

3. Remove the rear panel as outlined under “COVERS AND PANELS”.

4. Turn water supply off.

5. Disconnect lead wires and hoses.

6. Remove the two bolts from the bottom of the oven that secure the pump.

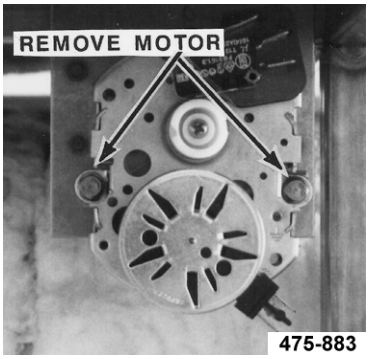


7. Reverse procedure to install.

VENT MOTOR

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

1. Remove the right side panel as outlined under “COVERS AND PANELS”.
2. Remove the air intake motor (10 level half size).
3. Disconnect the lead wires from the switch and motor.
4. Remove the pin that connects the motor and the shaft.
5. Remove the motor and switch assembly from the oven.



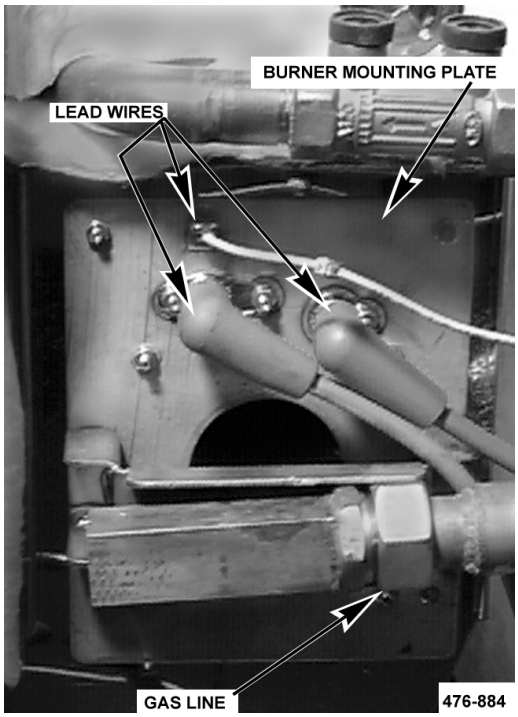
6. Remove the motor from the mounting bracket.
7. Reverse procedure to install.

BOILER BURNER

1. Turn the unit off and allow the boiler to drain.
2. **WARNING:** DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

   WARNING: SHUT OFF THE GAS BEFORE SERVICING THE UNIT.
3. Remove the right side and rear panels as outlined under “COVERS AND PANELS”.
4. Remove the flue from the boiler.

   NOTE: When installing the flue, seal the edges of the metal with high temperature sealant.
5. Disconnect the lead wires from the electrodes and the ground.
6. Disconnect the gas line.
7. Remove the screws from the burner mounting plate and remove the burner.
8. Reverse procedure to install.



ORIFICE (BOILER BURNER)

WARNING: SHUT THE GAS OFF TO THE UNIT.

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

1. Remove the back panel as outlined under “COVERS AND PANELS”.
2. Remove the lead wires from the two electrodes.
3. Remove the orifice from the holder.
4. Reverse procedure to install.

BOILER

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

WARNING: SHUT OFF THE GAS BEFORE SERVICING THE UNIT.

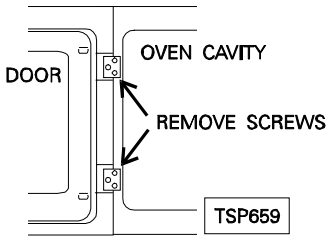
1. Turn water supply to the boiler off and drain the boiler.
2. Remove the right side and rear panels as outlined under “COVERS AND PANELS”.
3. Remove the boiler burner as outlined under “BOILER BURNER”.
4. Disconnect all water and drain connections to boiler.
5. Remove insulation from old boiler and separate the burner box from the boiler.
6. Reverse procedure to install.

OVEN DOOR

Removal

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

1. Remove the rear panel as outlined under “COVERS AND PANELS”. (Ovens with lights)
2. Disconnect the lead wires to the light at the terminal block in the left rear corner and route them so they can be pulled through the hole in the frame when the door is removed. (Ovens with lights)
3. Support the door, remove the screws from each hinge and remove door.



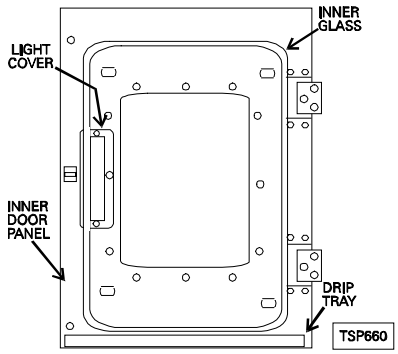
4. Reverse procedure to install.

Disassembly

1. Remove the door from the oven as outlined under “OVEN DOOR”.
2. Lay the door on a flat surface with the inside of the door facing up.
3. Remove the inner glass by removing the four screws.

   Caution: Install the conductive side toward the front of the oven. To verify the conductive side, use an ohmmeter. Some resistance will show between the meter leads depending on the distance between the meter leads, grease and/or other substances on the glass.

4. Remove the light cover and drip tray.
5. Remove the screws from the top and bottom hinges.
6. Remove remaining screws from the inner door panel.



7. Remove the screws from the bottom of the door.
8. Remove the inner door panel from the outer door panel.
9. Remove the outer glass.

   NOTE: Install the outer glass so the logo can be read with the door closed.

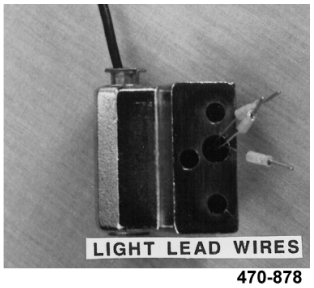
10. Reverse procedure to install.
11. Adjust the door as outlined under DOOR ADJUSTMENT” in “SERVICE PROCEDURES AND ADJUSTMENTS”.

OVEN DOOR HINGES

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

1. Remove and disassemble the door as outlined under “OVEN DOOR”.

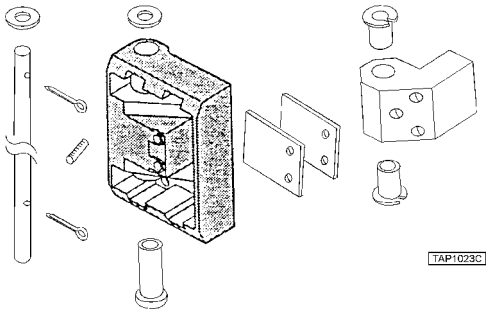
2. Remove the light lead wire from the hinge. (Ovens with lights only)
   NOTE: Strip 3 inches of the shielding away from the wires at the terminal end to allow the terminals to be fed through the hinge one at a time.



470-878

3. Remove the cotter pins from the shaft and remove the shaft from the hinges.

471-879



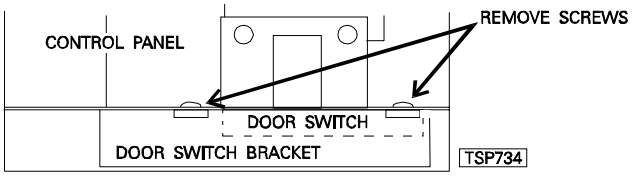
4. Reverse procedure to install.

DOOR HANDLE SWITCH

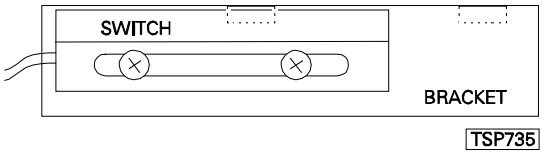
WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

1. Remove the control panel and let it hang by the chain as outlined under “COVERS AND PANELS”.

2. Remove the screws that secure the door switch mounting plate.



3. Disconnect the switch lead wires.
4. Remove the switch from the bracket.



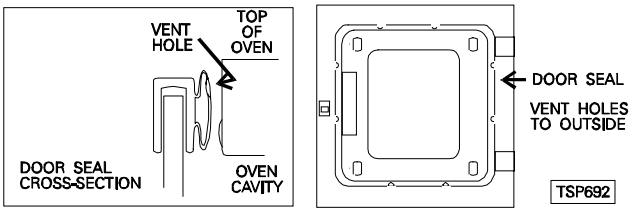
5. Reverse procedure to install.

DOOR SEAL

1. Turn the oven off.

2. Open the oven door.

3. Remove seal from the edge of the inside glass.
4. Clean the edge of the glass, remove the old adhesive.
5. Apply red silicone to the replacement seal and install the seal to the glass edge. The vent holes must be installed to the outside to allow the seal to contract when the door is closed.



6. Adjust door closure, if necessary, as outlined under “OVEN DOOR AND DOOR LOCK ADJUSTMENT” in “SERVICE PROCEDURES AND ADJUSTMENTS”.

DOOR LOCKING MECHANISM

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

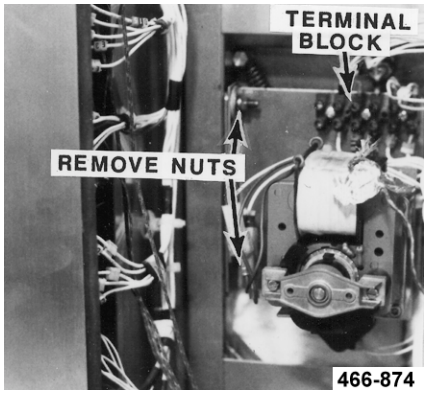
Replacement

1. Remove the right side panel as outlined under “COVERS AND PANELS”.

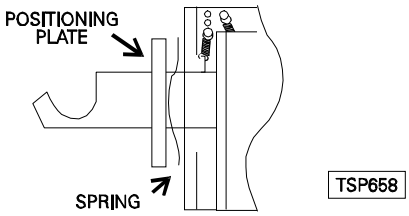
2. Remove the relay board. (Model 10 only).

3. Disconnect the lead wires to the motor and switches.

4. Remove the nuts from the mounting studs and remove the assembly from the oven.



5. Remove the spring and positioning plate from the locking arm.

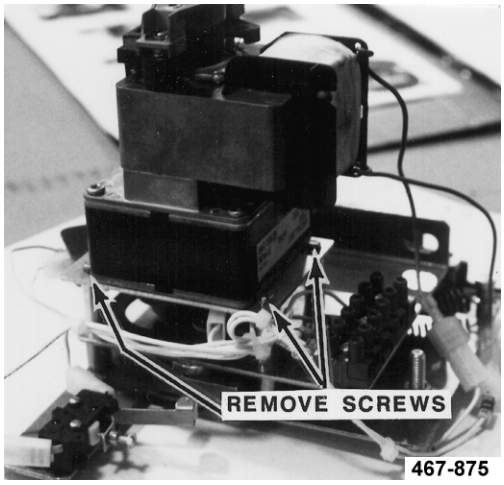


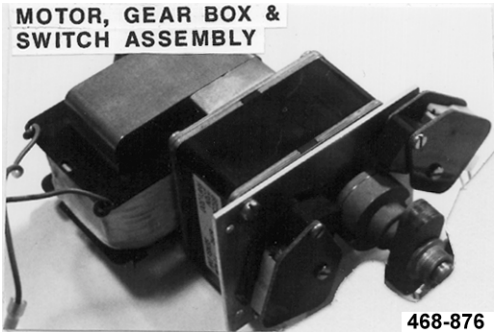
6. Reverse procedure to install and adjust as outlined under “OVEN DOOR AND DOOR LOCK ADJUSTMENT” in “SERVICE PROCEDURES AND ADJUSTMENTS”.

Disassembly

1. Remove the three screws that secure the motor and switch assembly.

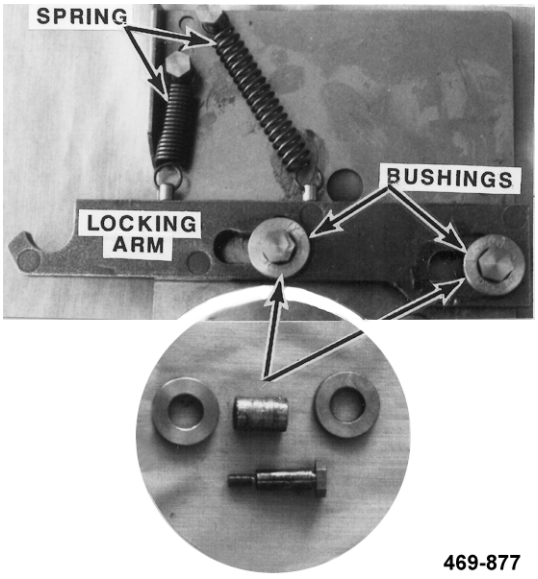
2. Remove the motor, gear box and switch assembly from the locking mechanism.





3. Remove the two bolts from the locking mechanism.

4. The springs, locking arm and bushings can be removed.



5. Reverse procedure to install.

OVEN CAVITY SEAL

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

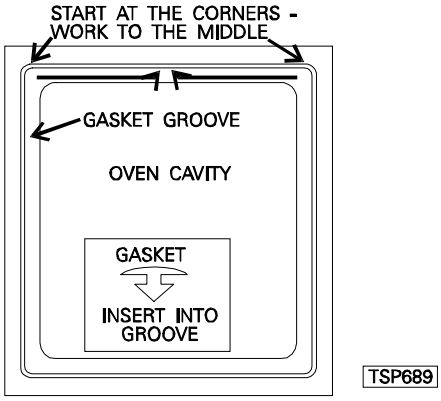
1. Open the door.

2. Pull the seal from the groove around the oven cavity.

3. Push the arrow head tip of the gasket into the groove. Install the four corners first.

4. Start at the corners and work to the middle of each side, being careful not to stretch the replacement gasket.

5. Check the door for proper operation and adjust if necessary, as outlined under "OVEN DOOR AND DOOR LOCK ADJUSTMENT" in "SERVICE PROCEDURES AND ADJUSTMENTS".



OVEN CAVITY DRAIN SEAL

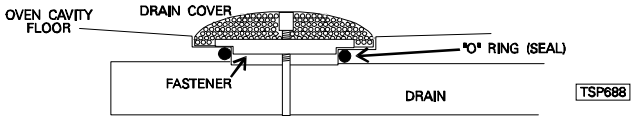
WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

1. Open the door.

2. Remove the drain cover from the fastener by lifting up. It is attached by a spring clip.

3. Remove the fastener that secures the drain to the cavity. This lowers the drain enough to remove the seal.

4. Remove the "O" ring (seal) from around the drain opening.



5. Reverse procedure to install.

AIR INTAKE MOTOR

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

1. Remove the right side and rear panels as outlined under "COVERS AND PANELS".

2. Remove the boiler flue. (10 level half size)

3. Remove the hose clamp from the outlet side of the motor housing.

4. Remove the screws that secure the air intake motor plate.

   NOTE: Two of the screws also hold the compartment fan in place.. (10 level half size)

5. Reverse procedure to install.

SERVICE PROCEDURES AND ADJUSTMENTS

WARNING: CERTAIN PROCEDURES IN THIS SECTION REQUIRE ELECTRICAL TEST OR MEASUREMENTS WHILE POWER IS APPLIED TO THE MACHINE. EXERCISE EXTREME CAUTION AT ALL TIMES. IF TEST POINTS ARE NOT EASILY ACCESSIBLE, DISCONNECT POWER, ATTACH TEST EQUIPMENT AND REAPPLY POWER TO TEST.

COMBI STEAM OPERATION

The combi mode is used when steam needs to be added to a bake mode. The boiler burner operates a percentage of the bake time depending on the combi setting on the control.

Indicator Lights (on front panel)	% Steam	Seconds ON	Seconds OFF
●○○○○○	20	16	64
●●○○○○	30	24	56
●●●○○○	40	32	48
●●●●○○	50	40	40
●●●●●○	60	48	32
●●●●●●	75	60	20

CONTROL TEST MODE

- The test mode can be entered only when the oven is off.
- The six test are run in sequence, the test number (1 - 6) is indicated by the position of the illuminated LED in the bar graph of the combi mode key.

The test are performed in a fixed sequence of:
1. ROM (automatically)
2. RAM (automatically)
3. Displays and LEDs
4. Relays (relay on for max. of 2 seconds)
5. Keyboard
6. Sensor status

To Perform:

1. To enter the test mode press the “temp”, “temp up” and “temp down” keys simultaneously for 5 seconds.

2. If a ROM or RAM failure is detected, a failure code (01 = ROM and 02 = RAM) will be displayed on the temperature display, otherwise the next test will be performed.

3. The DISPLAY and LED test consists of flashing all displays and LEDs on for 1.5 seconds and off for .7 seconds. Failure is detected by visual observation. This test cycle will continue until any key is pressed.

4. The RELAY test consist of selecting a particular relay (numbered between 1 and 11) with the temperature up and down keys. The selected relay is then energized for a maximum of 2 seconds when the temperature set key is pressed. The test may be exited at any time by pressing the “off” key and holding for a minimum of 3 seconds.

Code	Relay	Component	Code	Relay	Component	Code	Relay	Component
01	K1	door motor	05	K6	drain pump	09	K8	ignition module, boiler
02	K2	motorized vent	06	K4,K6	water solenoid	10	K10	fan motor
03	K3	motorized ball valve	07	K4,K5	air intake fan and cavity light	11	K9	N/A
04	K4	main relay	08	K7	ignition module, cavity burner			

5. The KEYBOARD test consist of pressing each key. With each successful key press, the number of the key is displayed on the temperature display. Each key is numbered, starting with number 1 (ON) in the upper left corner of the control.

KEY	Key #	KEY	Key #	KEY	Key #	KEY	Key #
ON	01	Phase	07	Temp Down	13	Enter Up	19
OFF	02	Time	08	Temp Up	14	Reset Cavity Burner	20
Hot Air	03	Time Down	09	Delta T	15	Reset Boiler Burner	21
Steam	04	Time Up	10	Prog	16		
Combi	05	Probe	11	Enter	17		
Start/Stop	06	Temp	12	Enter Down	18		

6. The SENSOR STATUS test consist of selecting a particular sensor (numbered between 1 and 11) with the temperature up and down keys. The selected sensor is then tested when the temperature set key is pressed. The test may be exited at any time by pressing the “off” key.

Code	Sensor	Code	Sensor	Code	Sensor
01	cavity flame detection	05	cavity safety t’stat	09	upper water level
02	pressure switch	06	closed position for motorized ball valve	10	lower water level
03	boiler flame detection	07	opened position for motorized ball valve	11	motor reset switch
04	door switch	08	closed position for motorized vent		

CONTROL CONFIGURATION MODE

- The configuration mode can be entered only when the oven is off.
- Returning to the normal operating mode can be done at any time by pressing the “off” key.

The selection are performed in a fixed sequence of:
1. Number of fan motors. (1 = 10 levels and 2 = 20 levels)
2. Degrees Celsius or Fahrenheit.
3. Date code of software version.
4. Total running time of the oven is displayed in the temperature display.
5. Buzzer sound impulses.

1. To enter the configuration mode press the “time”, “time up” and “time down” keys simultaneously for 5 seconds.

2. 1 or 2 is displayed. Press “temp up” for 10 level (1); “temp down” for 20 level (2). The blinking letter is the one that has been selected. Wait 3 seconds after the selection and the control will advance.

3. C or F is displayed. Press “temp up” for Fahrenheit; “temp down” for Celsius. The blinking letter is the one that has been selected. Wait 3 seconds after the selection and the control will advance.

4. The software version code is shown in the time display. The first character is the day code, the second is the month and the third is the year. Press the up or down arrow key to advance to the next step.

Day coding system				Month coding system				Year coding system			
Code	DAY	Code	DAY	Code	Mon.	Code	Mon.	Code	Yr	Code	Yr
0	1	8	16 or 17	1	Jan	9	Sep	0	90	8	98
1	2 or 3	9	18 or 19	2	Feb	A	Oct	1	91	9	99
2	4 or 5	A	20 or 21	3	Mar	B	Nov	2	92	A	00
3	6 or 7	B	22 or 23	4	Apr	C	Dec	3	93	B	01
4	8 or 9	C	24 or 25	5	May			4	94	C	02
5	10 or 11	D	26 or 27	6	Jun			5	95	D	03
6	12 or 13	E	28 or 29	7	Jul			6	96	E	04
7	14 or 15	F	30 or 31	8	Aug			7	97	F	05

5. HHH is displayed in the time display and the running time is displayed in the temperature display. Press “temp up” to increase number; “temp down” to decrease number. Press the timer up or down arrow key to advance to the next step.

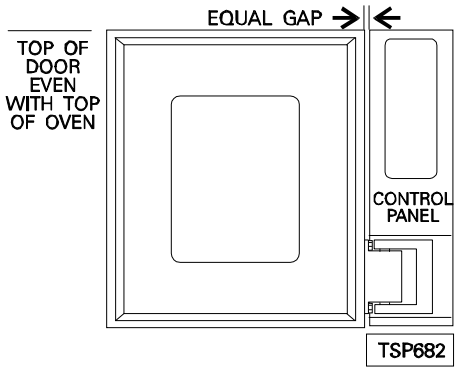
6. bbb is displayed in the time display and the signal code is displayed in the temperature display. Use the temperature up and down arrow keys to set the buzzer signal code. (000 = continuous and 255 = very slow intervals)

OVEN DOOR ADJUSTMENT

1. Turn the oven off.

2. Loosen the hinge screws enough that you can move the door but the door will stay in position when not being moved.

3. Position the door square with the oven, then tighten the hinge screws.



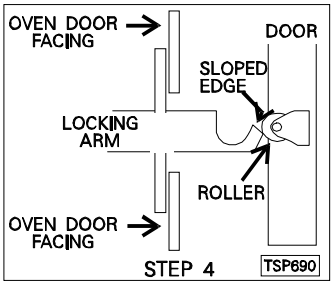
4. Position the door with the roller on the strike against the locking arm. Observe (through the door glass) the mating of the locking arm with the roller. The roller should mate at the bottom of the sloped edge of the locking arm. This allows the locking arm to be pushed down during closing and after closing the roller will be positioned in the hook.

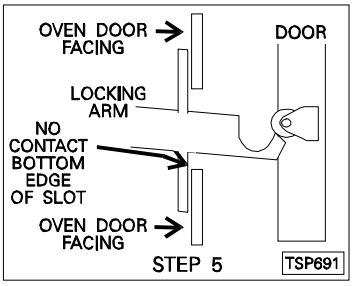
   NOTE: If the oven has a light, turn the light on to help you see the strike.

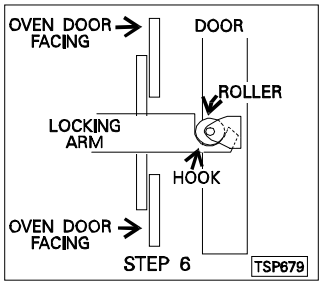
   A. You can raise or lower the door locking mechanism to position the locking arm to the roller.

   B. On 20 Series Ovens, the roller can also be moved to obtain the adjustment.

5. Push the door closed and observe the locking arm. It must not contact the bottom edge of the slot in the oven door facing while the door is being closed.





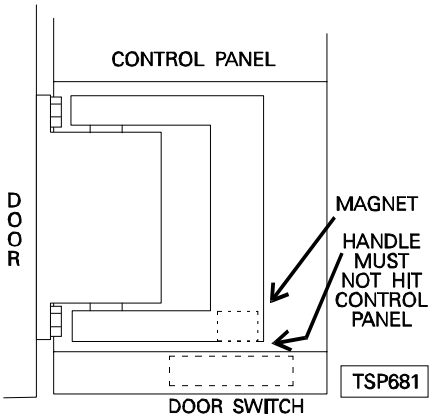


6. With the door in the closed position the roller should be cradled in the door lock arm hook.

7. Close the handle. The handle should be centered in the cut-out of the control panel so the magnet in the handle will operate the reed switch and not rub on the control panel.

   NOTE: The control panel position can be adjusted by loosening the bottom screws and either raising or lowering to center the door handle.

8. Turn the oven “on”.



9. The door should be pulled shut and locked in position to seal the oven opening.

10. The space between the top edge of the door and the oven should be equal.
    A. This space can be adjusted by adding or removing shims from the door hinges or the door locking mechanism.

       (1) If the space is larger at the hinge end, remove shim(s) from behind the hinges or from in front of the door locking mechanism.
       (2) If the space is smaller at the hinge end, add shim(s) behind the hinges or in front of the door locking mechanism.

    B. If the space is equal, but the oven does not seal. Remove shims from the hinges and in front of the door locking mechanism.

SERVICE LIGHTS

There are four lights at along the bottom of the control. When lit, they tell the operator that the oven needs service. The lights are, from left to right:

1. Air Intake: Air flow to cavity burner is restricted, check filter. Turn oven off to reset light.

2. Cavity Burner Ignition: Flame is not detected, press reset button above light to reset.

3. Boiler Burner Ignition: Flame is not detected, press reset button above light to reset.

4. Cavity Fan: Fan not operating, remove power from oven and press reset switch on relay board.

   NOTE: The right side panel will have to be removed.

FLAME SENSOR CIRCUIT CHECK

1. Connect a micro ammeter in series with the flame signal ground wire. (Use dc scale.)

2. Restart the system and read the meter. The flame sensor circuit must be at least 1.5μA and steady.

3. If the amp reading is low or unsteady check:

   A. Position of flame sensor electrode.

   B. Bent or damaged electrode.

   C. Connections of flame sensor lead wire.

SENSOR CABLE AND GROUND WIRE CHECK

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

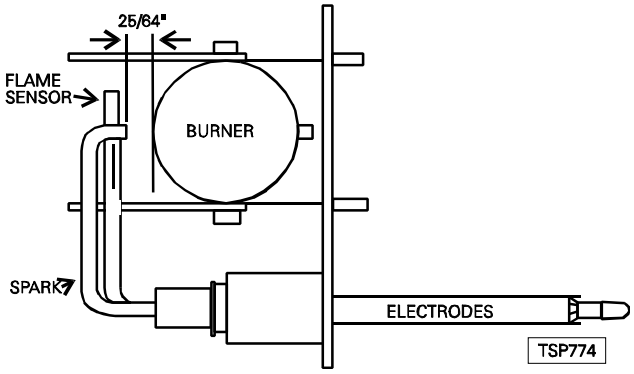
A common ground is required for the burner, spark ignitor and flame sensor mounting bracket, the “GND” terminal of the ignition control.

1. Check for continuity between these ground wire connections.

ELECTRODE GAP SETTINGS

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

1. The spark rod gap is 25/64 inch.



FLAME SENSOR INSPECTION

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

1. Flame rod or mounting bracket can not be bent.

2. Ceramic insulator can not be cracked.

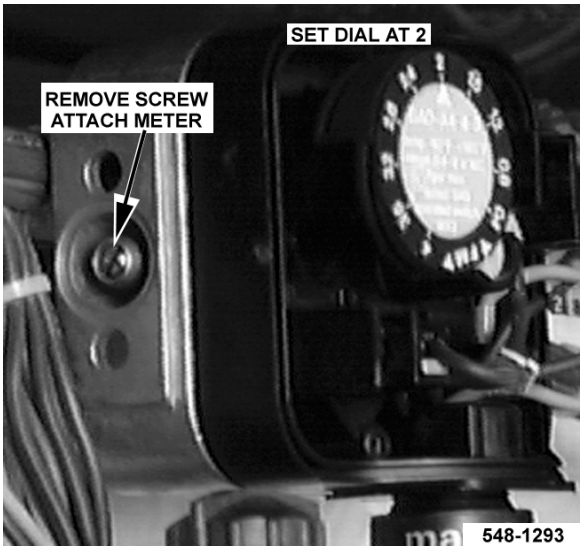
3. Observe the burner while operating to inspect:

   A. Flame rod must be emerged in the flame.

   B. Approximately 1 inch of the flame rod should be immersed in the flame.

PRESSURE SWITCH CHECK

1. Set the pressure switch dial on 2.
2. Remove the screw from the test port and attach a manometer.
3. Check for 2"W.C.
4. Move the dial to obtain the 2"W.C.



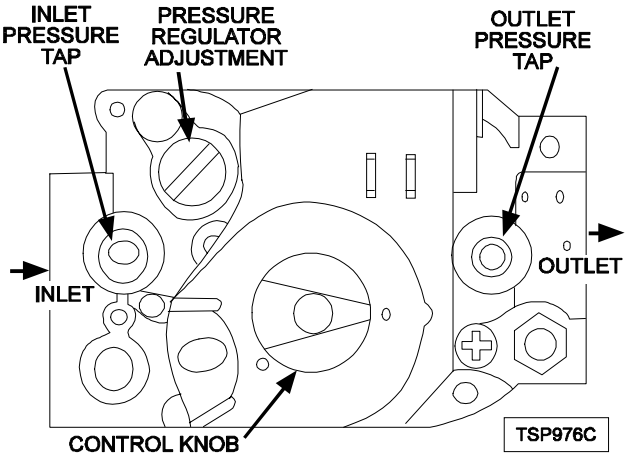
GAS PRESSURE ADJUSTMENT

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AT THE MAIN CIRCUIT BOX. PLACE A TAG ON THE CIRCUIT BOX INDICATING THE CIRCUIT IS BEING SERVICED.

1. Ensure the proper orifices are installed in the burner assembly as outlined under “ORIFICE” in “REMOVAL AND REPLACEMENT OF PARTS”.
2. Attach the manometer to the ⅛" NPT outlet pressure tap on the gas valve.
3. Remove the pressure regulator adjustment cap of the main gas valve to access the slotted adjustment screw.
4. Set up oven to call for heat and adjust pressure regulator for the proper manifold pressure.

   NOTE: ACCURATE GAS PRESSURE ADJUSTMENTS CAN ONLY BE MADE WITH THE BURNER RUNNING AND THE GAS ON.

   NOTE: Turn adjustment screw clockwise to increase pressure.
   Turn adjustment screw counterclockwise to decrease pressure.



3½" W.C. for Natural gas.
10" W.C. for LP.

ELECTRICAL OPERATION

COMPONENT FUNCTION

1A Oven Control . . . . . Manages all functions of oven, takes input signals and performs outputs as required.

2A Relay Board . . . . . Takes inputs from control to operate relays that control power to the components.

3A Cavity Burner Ignition Module
Controls and monitors the cavity burner operation.

4A Boiler Ignition Module Controls and monitors the boiler burner operation.

5A Gas Valve (Cavity) . . . Controls gas to the cavity burner.

6A Gas Valve (Boiler) . . . Controls gas to the boiler burner.

F1 Fuse . . . . . 250mA - Protects output to display and control (24 VAC).

F2 Fuse . . . . . 2A - Controls all inputs except cavity blower motor (250 VAC).

F3 Fuse . . . . . 6.3A - Protects the oven fan motor (250 VAC).

F4 Fuse . . . . . 6.3A - Protects the oven circuit on L1 (120 VAC).

F5 Fuse . . . . . Protects the light circuit.

F6 Fuse . . . . . 250 mA - Protects the low voltage input supply (18 VAC).

F7 Fuse . . . . . 250 mA - Protects the low voltage input supply (18 VAC).

1LT Oven Light . . . . . Illuminates oven cavity.

1M Vent Motor . . . . . Opens and close exhaust port.

2M Drain Pump Motor . . Empties boiler.

3M Cooling Fan . . . . . Exhaust component compartment air to cool components.

4M Door Motor . . . . . Pulls door into and out of lock position.

5M Oven Blower Motor . . Circulates air through the oven cavity.

6M Cooling Fan . . . . . Pulls cool air into component compartment to cool components.

7M Ball Valve Motor . . . . Moves ball valve into open and close position.

8M Air Intake Motor . . . . . Circulates outside air through the oven cavity burner gas/air tube.

9M Oven Blower Motor . . Circulates air through the oven cavity. 20 level only

10M Door Motor . . . . . Pulls door into and out of lock position. Bottom of 20 level

Cavity Probe . . . . . Signals the control, the oven cavity temperature.

Meat Probe . . . . . Inserted into product. Signals control of internal product temperature.

1SOL Water Valve . . . . . Opens when water is needed in the boiler.

1SW Cavity Motor Reset Resets relay K10.

2SW Door Mech Switch . Allows door motor to operate to unlock door.

3SW Door Mech Switch . Allows door motor to operate to lock door.

4SW Cavity Vent Switch . Signals control, vent is opened or closed.

5SW Ball Valve Switch . . Signals control, ball valve is open.

6SW Ball Valve Switch . . Signals control, ball valve is closed.

7SW Air Pressure Switch Prevents the cavity burner from operating until 2"W.C. of air is moving through the air/gas tube.

8SW Door Handle Switch Signals control, door is in position to be closed.

9SW Door Mech Switch . Allows bottom door motor to operate to unlock door. (20 Level)

10SW Door Mech Switch Allows bottom door motor to operate to lock door. (20 Level)

1TAS High Limit T'stat . . Removes power to cavity burner if oven cavity overheats (manual reset) (650°F).

2TAS High Limit T'stat . . Removes power to cavity burner if oven cavity overheats (manual reset) (650°F).

3TAS High Limit T'stat . . Removes 24 volt to boiler ignition module if boiler overheats (auto reset) (275°F).

4TAS High Limit T'stat . . Removes 24 volt to boiler ignition module if boiler overheats (auto reset) (275°F).

1TB Terminal Block . . . . Incoming voltage leads are connected at 1TB.

1T Main Transformer . . . Supplies 18 VAC and 220 VAC.

2T Cavity Ignition Transformer Supplies 24 VAC to cavity burner ignition module.

3T Boiler Ignition Transformer . . . Supplies 24 VAC to boiler burner ignition module.

Water Level Probes . . . . . Maintains boiler water level. Water fills until circuit is complete through high level probe and ground. As water is used, water level drops below low level probe. The control is signaled by the open circuit. The water solenoid is energized to refill the boiler.

1K Door Relay . . . . . Controls power to door motor.

2K Vent Relay . . . . . Controls power to vent motor.

3K Ball Valve Relay . . . . Controls power to ball valve motor.

4K Start/Stop Relay . . . . Controls power to components used during a mode of operation when the Start/Sto key is pressed..

5K Air Intake/Light Relay Controls power to air intake motor and light circuit.

6K Solenoid Valve\Drain Relay Controls power to solenoid valve and drain motor.

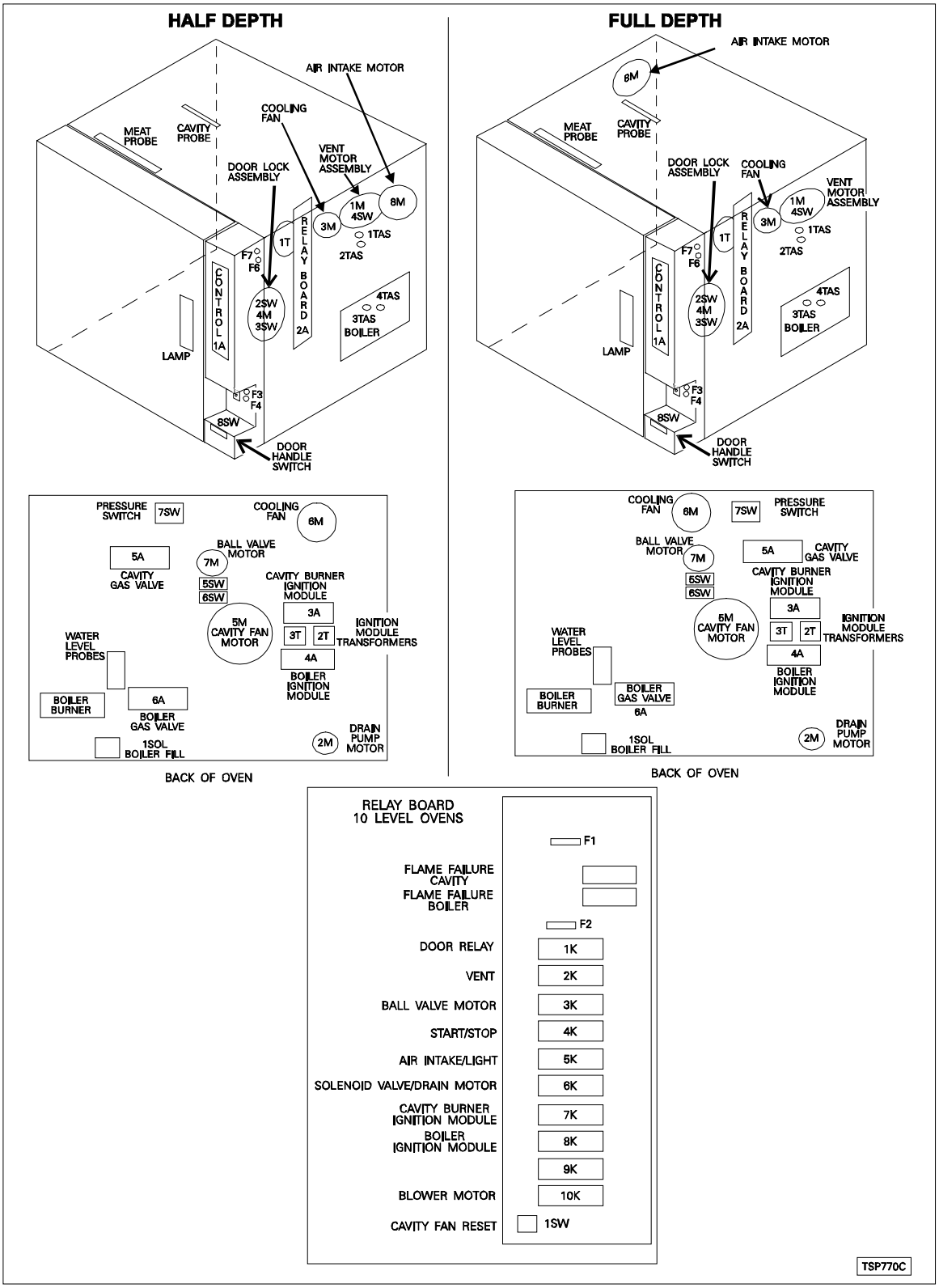
7K Cavity Burner Ignition Module Relay
Controls power to transformer that supplies power to the cavity ignition module.

8K Boiler Ignition Module Relay Controls power to transformer that supplies power to the boiler ignition module.

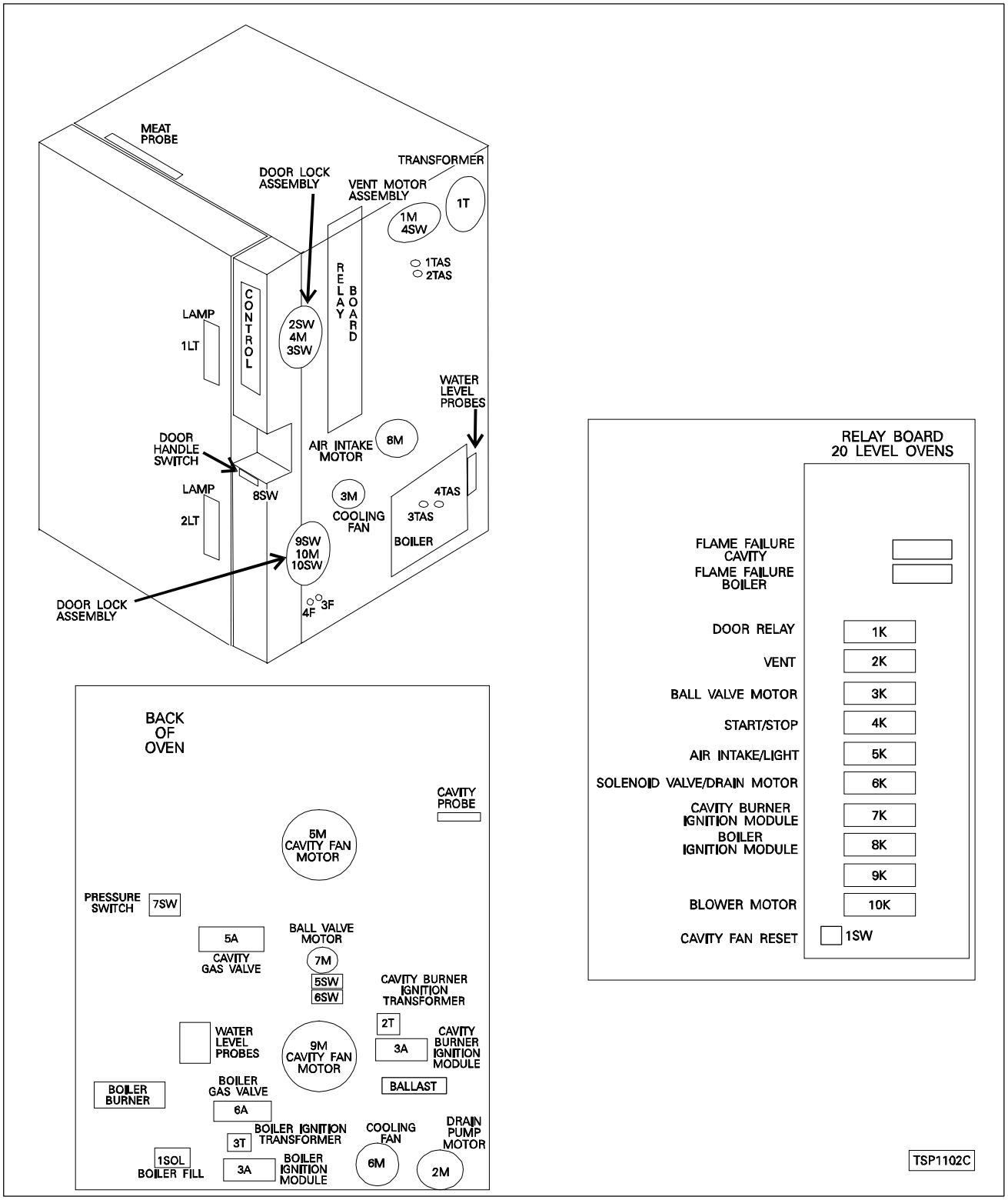
10KCavity Fan Relay . . . Controls power to cavity fan motor.

COMPONENT LOCATION

10 Level



20 Level


MEAT PROBE
TRANSFORMER
DOOR LOCK ASSEMBLY
VENT MOTOR ASSEMBLY
1T
1M 4SW
1TAS
2TAS
RELAY BOARD
CONTROL
LAMP
1LT
2SW 4M 3SW
WATER LEVEL PROBES
DOOR HANDLE SWITCH
AIR INTAKE MOTOR
8M
LAMP
2LT
8SW
3M
COOLING FAN
4TAS
3TAS
BOILER
9SW 10M 10SW
DOOR LOCK ASSEMBLY
4F
3F
BACK OF OVEN
CAVITY PROBE
5M CAVITY FAN MOTOR
PRESSURE SWITCH
7SW
5A
CAVITY GAS VALVE
BALL VALVE MOTOR
7M
5SW
6SW
CAVITY BURNER IGNITION TRANSFORMER
2T
WATER LEVEL PROBES
9M CAVITY FAN MOTOR
3A
CAVITY BURNER IGNITION MODULE
BOILER BURNER
BOILER GAS VALVE
6A
BALLAST
BOILER IGNITION TRANSFORMER
3T
COOLING FAN
DRAIN PUMP MOTOR
1SOL
BOILER FILL
3A
BOILER IGNITION MODULE
6M
2M
RELAY BOARD
20 LEVEL OVENS
FLAME FAILURE CAVITY
FLAME FAILURE BOILER
DOOR RELAY
1K
VENT
2K
BALL VALVE MOTOR
3K
START/STOP
4K
AIR INTAKE/LIGHT
5K
SOLENOID VALVE/DRAIN MOTOR
6K
CAVITY BURNER IGNITION MODULE
7K
BOILER IGNITION MODULE
8K
9K
BLOWER MOTOR
10K
CAVITY FAN RESET
1SW
TSP1102C

SEQUENCE OF OPERATION - OVEN

Powering Control

1. Conditions
   A. Oven installed correctly
   B. High limit thermostats closed
   C. 120 VAC to oven
      1) 18 VAC to control
      2) 240 VAC to control
   D. Fuses good
   E. Door in closed position, but not locked. Handle positioned over door handle switch.
   F. Cavity vent closed
   G. Gas and water "on"
2. Turn Oven on.
   A. Door closing motor energized; door locked.
   B. Ball valve motor operates and positions ball valve in open position.
   C. Cooling fans operate
   D. Cavity lights illuminate.
   E. Vent motor energized; vent opens.
   F. Control energized.
      (1) Cavity temperature displayed
      (2) Time displays -h --min.
   G. Water fill solenoid energized; Boiler fills.
3. Proceed to appropriate Cook Mode for continuation of sequence.

Convection Mode (Manual Operation)

1. Conditions as described in Powering Control.
2. Hot Air key pressed.
3. Set the temperature.
4. Start/Stop key pressed.
   A. Blower motor energized.
   B. Air intake motor energized.
   C. Cavity burner ignition circuit energized. (See burner sequence)
5. Control monitors oven cavity probe and cycles the air intake motor and ignition circuit on the set temperature.
6. Press Start/Stop key to end mode.

Steam Mode (Manual Operation)

NOTE: If you are going from a convection mode to a steam mode, the oven cavity must be cooled below the boiler set temperaure or the boiler burner will not light.

1. Conditions as described in Powering Control.

2. Steam key pressed.
   A. Ball valve motor energized; ball valve closed.
   B. Vent motor energized; vent closed.
3. Set temperature
4. Start/Stop key pressed.
   A. Blower motor energized.
   B. Boiler burner ignition circuit energized. (See burner sequence)
5. Control monitors oven cavity probe and cycles the ignition circuit on the set temperature.
6. Press Start/Stop key to end mode.

Combi Mode (Manual)

1. Conditions as described in Powering Control.
2. Set the temperature for the convection mode.
3. Set percentage of steam for combi mode.
   A. Press combi mode key 1 to 6 times for a range of 20 to 75 percent steam.
4. Start/Stop key pressed.
   A. Blower motor energized.
   B. Oven cavity burner ignition circuit energized.
   C. Boiler burner ignition circuit energized.
      (1) Boiler burner is only energized for the percent of time entered by the combi mode key.
5. Control monitors oven cavity probe and cycles the oven burner on the set temperature and cycles the boiler burner on the percentage of time set.
   NOTE: Both burners could be operated at the same time.
6. Press Start/Stop key to end mode.

Control Functions

1. In <u>timed cook cycles</u>, the control uses the cook mode selected to maintain the oven temperature and signals when time has expired. The time expiring does not affect the oven cavity temperature.

2. When using the <u>meat probe</u>, you set the oven cavity temperature and the internal temperature of the product. The cavity temperature is maintained by the cook mode selected. The control signals when the selected internal temperature of the product is obtained.

3. The <u>temperature differential</u> function uses the internal product temperature from the meat probe and an operator selected temperature differential to control the cavity temperature. Using the cook mode selected, the control maintains the temperature of the cavity at the internal product temperature plus the differential. As the internal temperature rises, the cavity temperature rises.

Example:	Start	End
Product temperature =	40°	300°
Temperature differential =	<u>90</u>°	<u>90</u>°
Cavity temperature =	130°	390°

Powering Down

1. The control can be in any mode and the door can be in any position.

2. Press the off key.

   A. All power removed from the burner ignition circuits and blower motor.
   B. Drain pump operates.
   C. Cavity vent motor energized; vent opens.

3. After 3 minutes.

   NOTE: The oven can not be turned on until the 3 minute cycle is complete unless the power is removed from the oven and re-applied.

   A. Drain pump de-energized.
   B. Cavity light de-energized.
   C. Cooling fans de-energized.

4. Oven conditions revert back to “POWERING CONTROL”.

SEQUENCE OF OPERATION - IGNITION MODULE

The S87 is activated by 24 volts from the transformer after the thermostat calls for heat. There is a 30 second purge time. An internal transformer provides power to the spark ignition circuit and the safety lockout timing begins. This is the start of the “trial for ignition” cycle. At the same time, the S87 opens the gas valve and gas flows to the burner. Power is supplied to the spark ignition circuit until:

- the burner lights and the flame sensing circuit reaches 1.5 μA, or
- the safety lockout timing period ends.

If the burner lights, the flame sensing circuit is completed through the flame to the burner head to ground. The current flow resets the safety lockout timer to 11 seconds and de-energizes the spark ignition circuit. Should the current flow be interrupted, the 11 seconds trial for ignition begins again.

The S87 will keep the gas valve open as long as there is a call for heat and current is flowing through the flame sensing circuit. If, however, the 11 seconds safety lockout period ends before the burner lights and the flame sensor does not establish enough current, the system will go into a safety lockout.

When the S87 goes into safety lockout, the spark ignition circuit is de-energized and the gas valve closes. The S87 will stay in safety lockout for 30 seconds.

1. Power supplied from 24 volt transformer when thermostat calls for heat.

2. A 30 second purge time is initiated.

3. A “Trial for Ignition” cycle begins.
   A. Power to spark ignition circuit.
   B. Safety lockout timer begins operation.
   C. Gas valve open.

4. Power is supplied to the spark ignition circuit until

   A. Flame sensor current reaches 1.5 μA or
   B. Safety lockout of 11 seconds ends; go to step 6.

5. Flame sensor current is sensed.

   A. Spark ignition circuit is de-energized.
   B. Safety lockout timer is reset.
   C. Gas valve remains open
   D. Go to step 8.

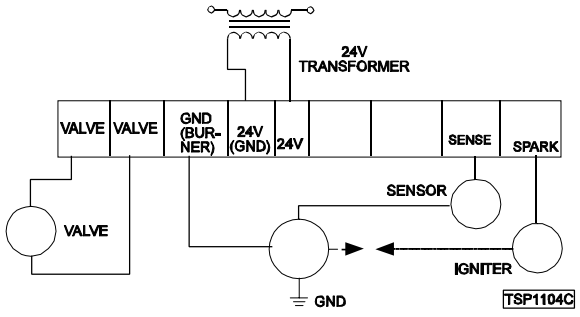
6. If the 11 seconds for safety lockout ends prior to the burner lighting or the flame sensing circuit establishing enough current, the S87 will go into a lockout.

   A. Spark ignition circuit de-energized.
   B. Gas valve closes.

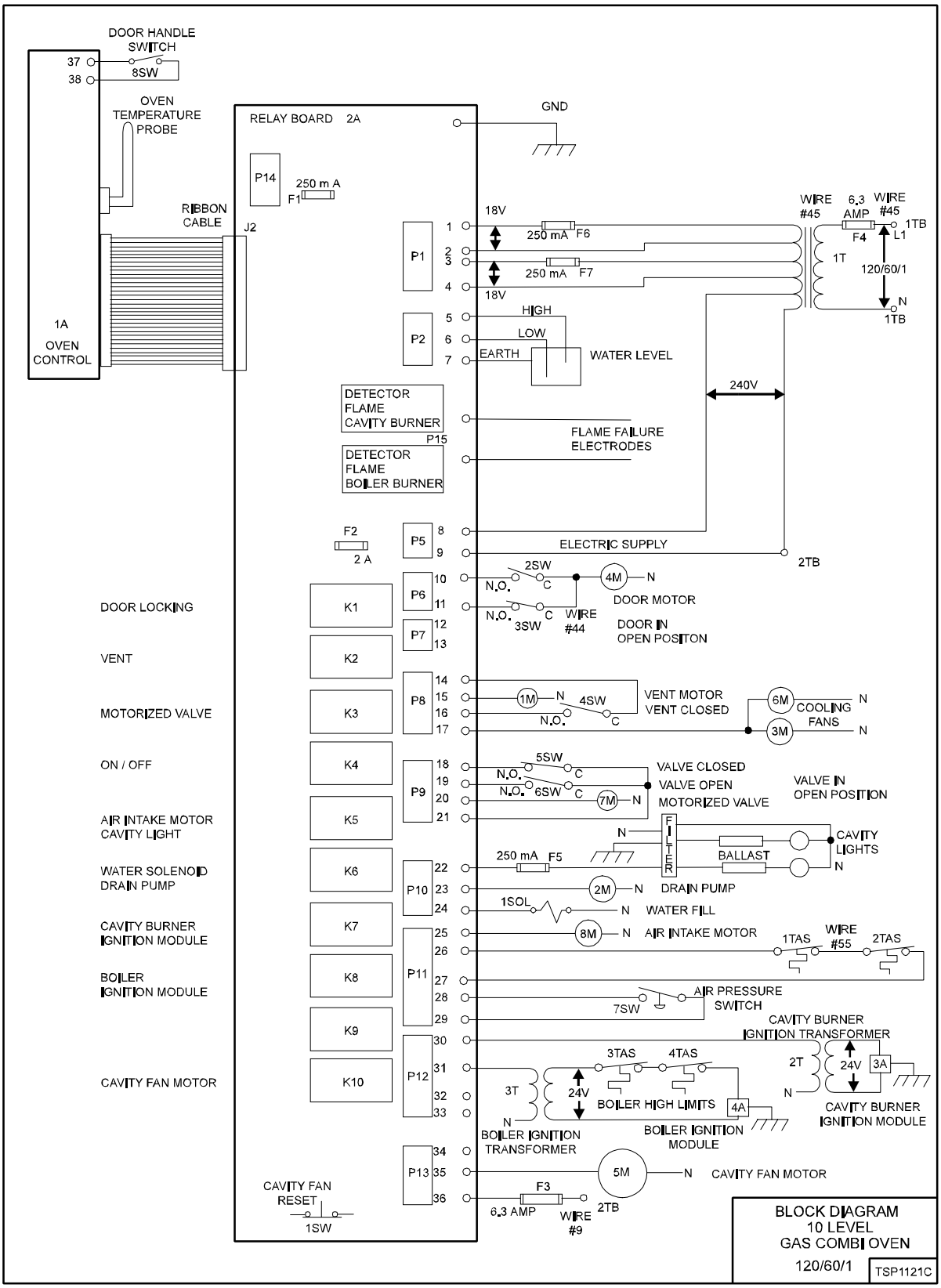
   NOTE: Should the current flow be interrupted once the flame sensor circuit is established, a trial for ignition cycle would begin (steps 2-4).

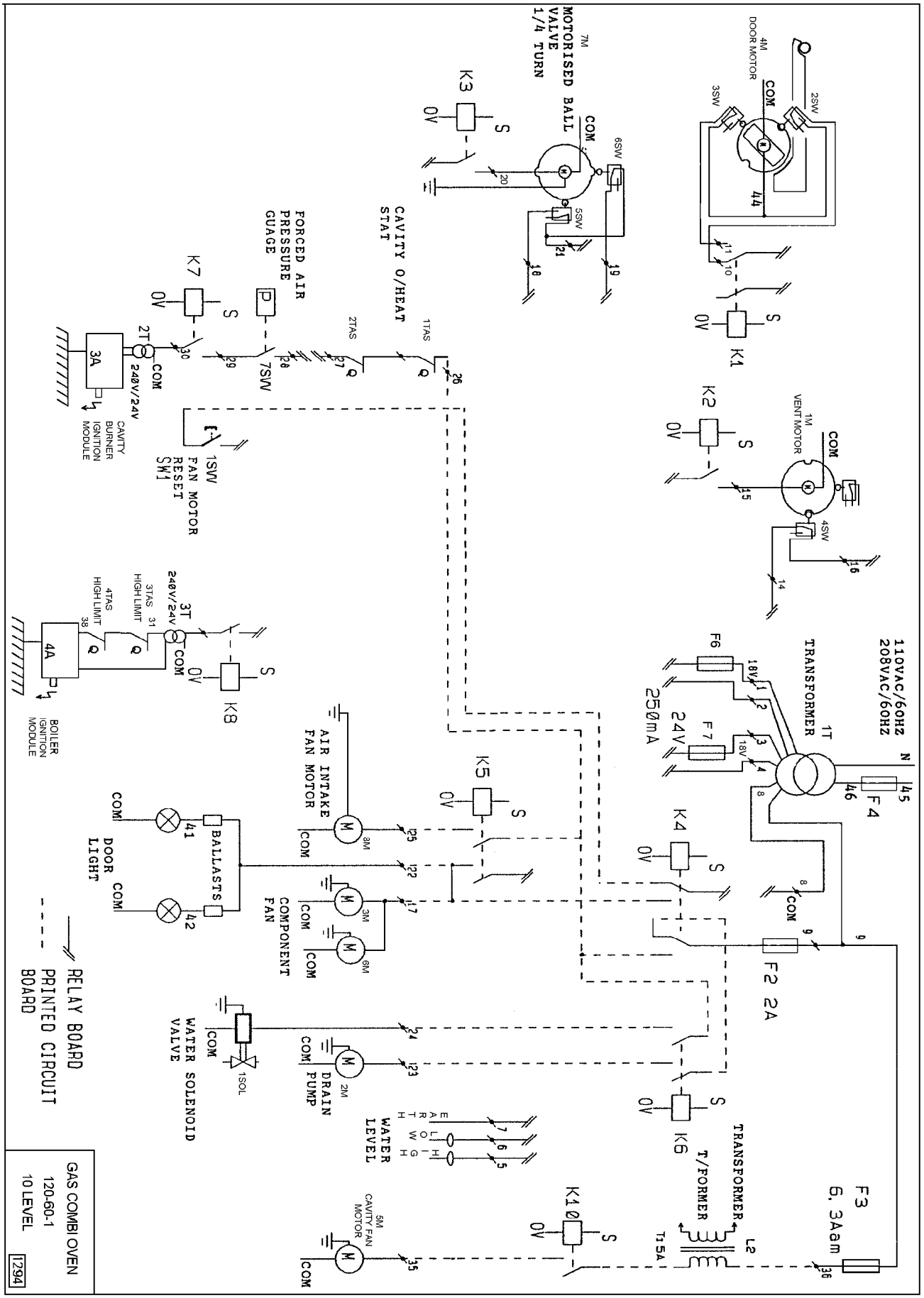
7. To reset the module, wait 30 seconds and re-apply power to oven control.

8. Control cycles on oven cavity temperature.



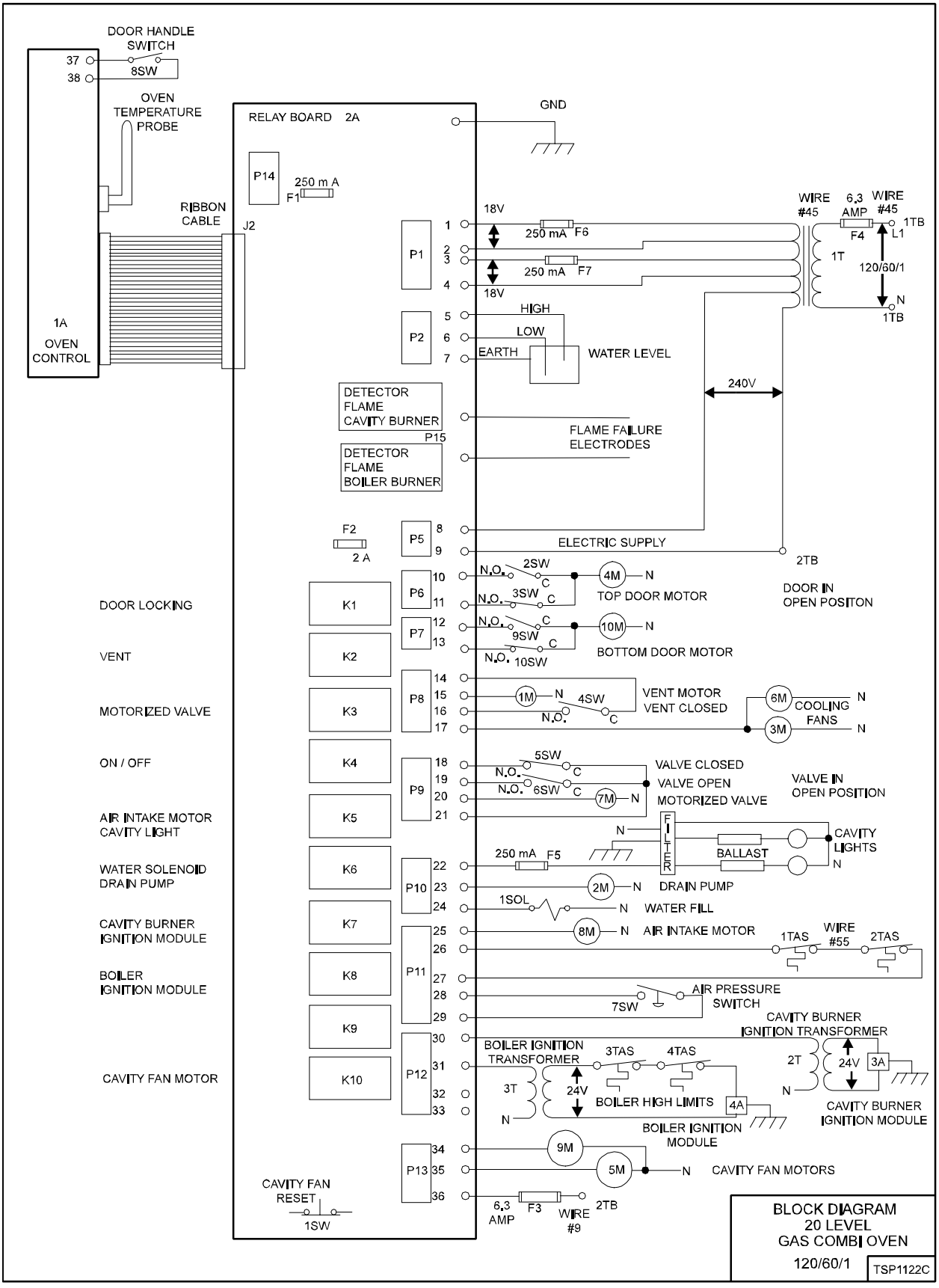
WIRING DIAGRAMS (10 LEVEL)

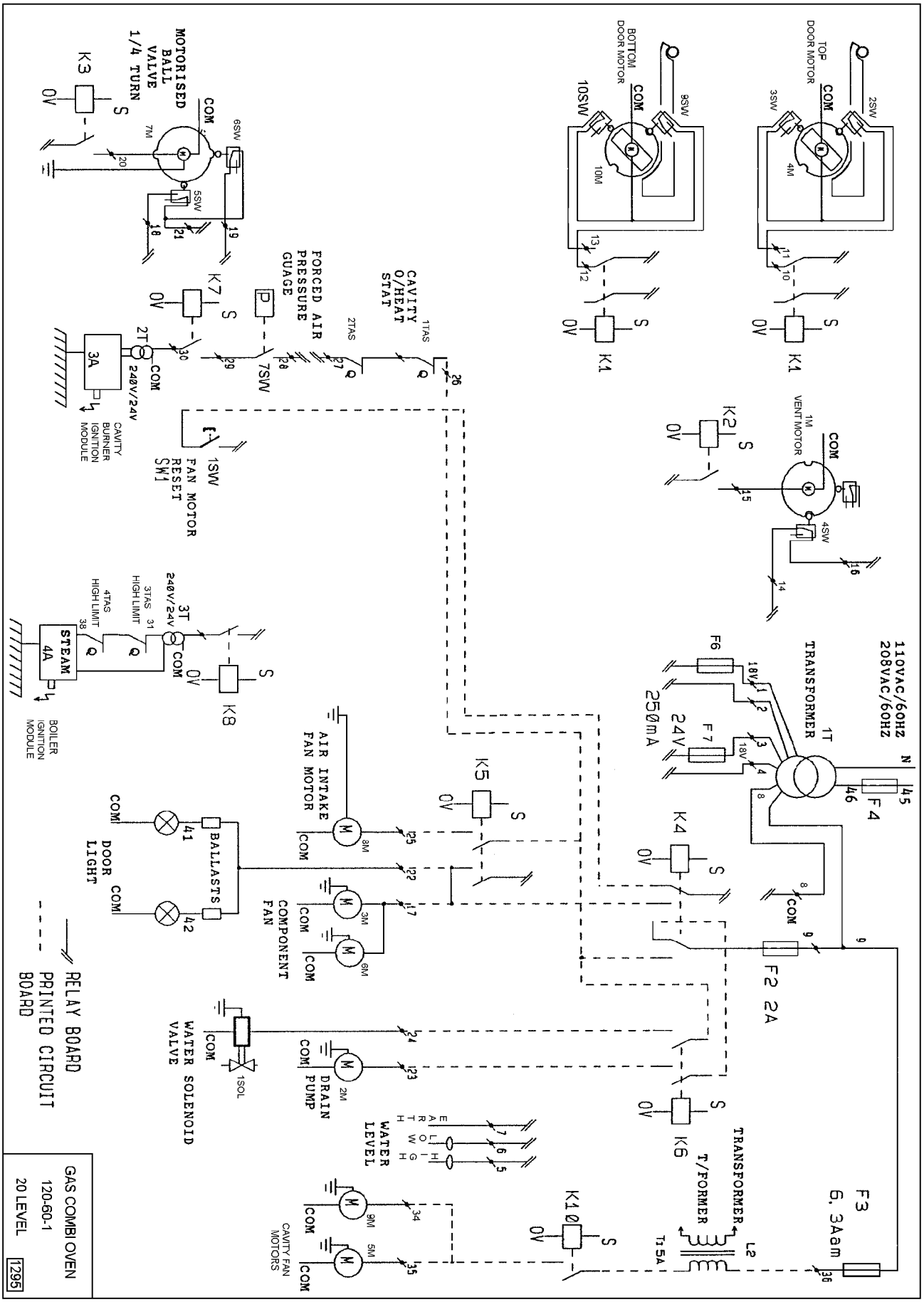




GAS COMBI OVEN
120-60-1
10 LEVEL
1294

WIRING DIAGRAMS (20 LEVEL)




110VAC/60HZ
208VAC/60HZ
TRANSFORMER
1T
F4
F6
F7
250mA
24V
F2 2A
F3
6.3Amp
TOP DOOR MOTOR
BOTTOM DOOR MOTOR
10SW
9SW
3SW
2SW
4M
10M
K1
K2
K3
K4
K5
K6
K7
K8
K10
1M VENT MOTOR
4SW
MOTORISED BALL VALVE 1/4 TURN
7M
6SW
5SW
FORCED AIR PRESSURE GUAGE
CAVITY O/HEAT STAT
1TAS
2TAS
7SW
CAVITY BURNER IGNITION MODULE
FAN MOTOR RESET SW1
1SW
3T
240V/24V
3TAS HIGH LIMIT
4TAS HIGH LIMIT
STEAM 4A
BOILER IGNITION MODULE
AIR INTAKE FAN MOTOR
8M
COMPONENT FAN
3M
6M
DOOR LIGHT
BALLASTS
WATER SOLENOID VALVE
1SOL
DRAIN PUMP
2M
WATER LEVEL
EARTH
LOW
HIGH
T/FORMER TRANSFORMER
T1 5A
CAVITY FAN MOTORS
9M
5M
RELAY BOARD
PRINTED CIRCUIT BOARD
GAS COMBI OVEN
120-60-1
20 LEVEL
1295

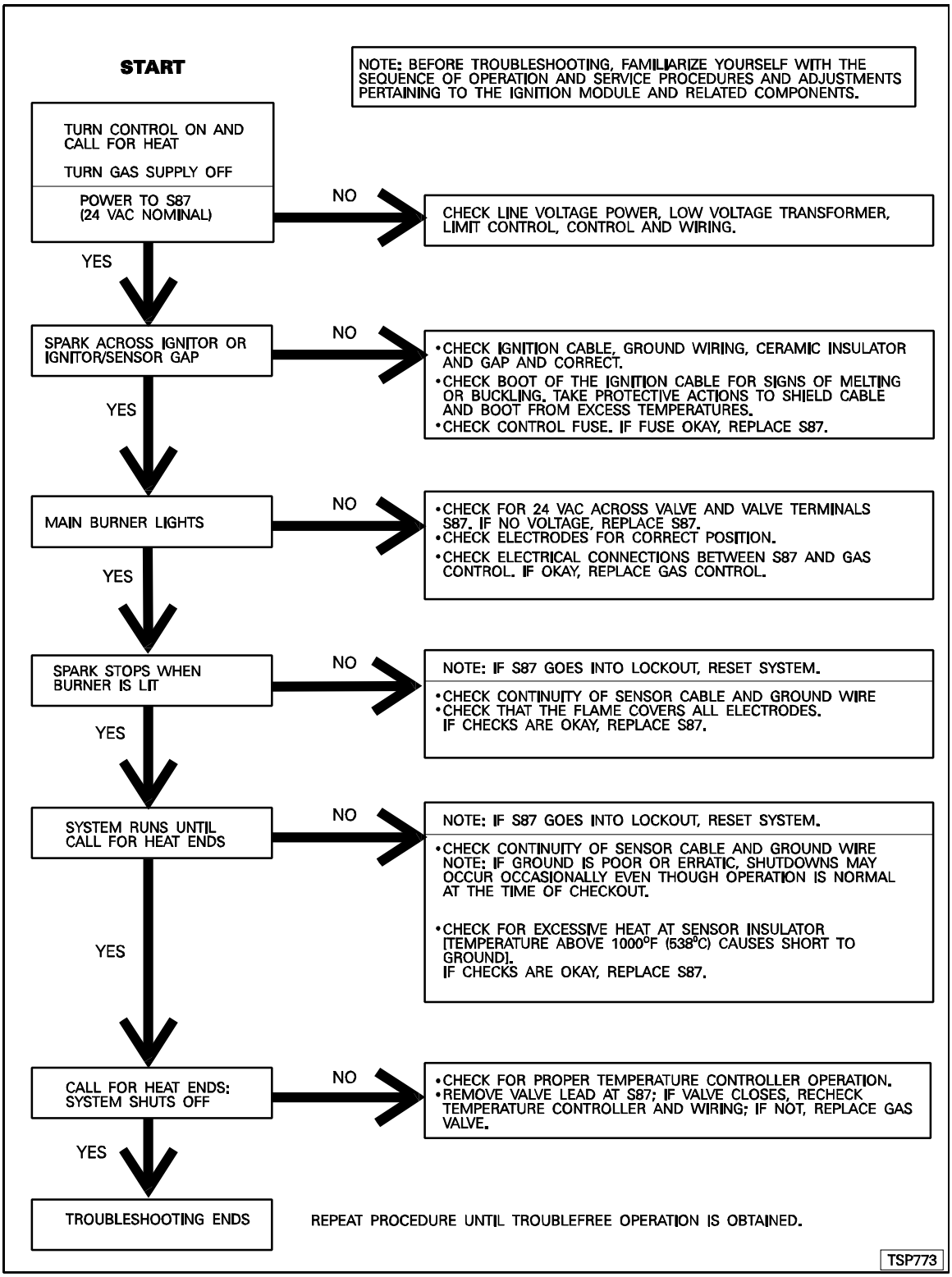
TROUBLESHOOTING

OVEN TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSES
Oven inoperative. Control displays do not light.	1. Check main circuit breaker. 2. F1, F2, F4, F6 or F7 open. 3. Main transformer malfunction. 4. Control inoperative.
Service indicator on control lights.	1. Blower motor inoperative. 2. Air intake filter or motor malfunction. 3. Cavity burner ignition circuit malfunction. 4. Boiler burner ignition circuit malfunction.
Temperature display flashes	1. Door switch open. 2. Open/short probe
Control operates; no bake or steam functions.	1. Door not locked. 2. 1K inoperative. 3. Control malfunction.
Oven operates for approximately 4 minutes, then buzzer sounds for 10 seconds and LED's in steam mode key and combi mode key blink continuously. Oven operates in convection mode. Will attempt to operate in steam and combi mode, but boiler burner will not attempt to light.	1. Water supply not turned on.
Oven will not operate using meat probe.	1. Product temperature below 35° F.
Control operates; no cavity fan. Cavity fan Service indicator on.	1. F3 open. 2. 1K inoperative 3. Cavity fan malfunction 4. Control malfunction.
Control operates; no steam,	1. Cavity temperature above boiler set temperature. 2. Water supply valve off. 3. Boiler burner inoperative. 4. Water level probes malfunction. 5. Control malfunction.
Pressure switch closed, no spark at cavity burner.	1. Ignition transformer malfunction. 2. Fuse on ignition module open. 3. Ignition module in safety lockout. 4. Ignitor probe out of position. 5. Ceramic insulator on either electrode cracked. 6. Ignition module malfunction.

No spark at boiler burner.	1. Water level below earth probe 2. Ignition transformer malfunction. 3. Fuse on ignition module open. 4. Ignition module in safety lockout. 5. Ignitor probe out of position. 6. Ceramic insulator on either electrode cracked. 7. Ignition module malfunction.
Pressure switch Service Light on.	1. Pressure switch not closing. A. Air intake filter plugged. B. Air intake motor inoperative. C. Ball valve in closed position. D. Pressure switch malfunction.
Light not working.	1. F5 open. 2. Bulb inoperative. 3. Ballast malfunction 4. Control malfunction.
Cavity burner inoperative.	1. 1TAS or 2TAS open. 2. Check incoming power. 3. Check gas supply. 4. Ignition module malfunction. 5. Control malfunction.
Door will not lock.	1. Door handle magnet not positioned over door switch. 2. Door switch open. 3. 1K relay inoperative. 4. Door motor & switch mechanism inoperative. 5. Motor stop stuck in the open position.
Water in component area.	1. Check drain seal in bottom of oven cavity. 2. Check RTV on probes and burner tube.
Vent not operating.	1. Mechanical binds - damper. 2. Motor & switch assembly malfunction. 3. Control malfunction.
Water in cavity.	1. Water too soft. 2. High water level probe malfunction. 3. Water solenoid stuck open.
Drains continually.	1. K6 malfunction. 2. Pump malfunction. 3. Control board malfunction.
Inner door glass breaks.	1. Glass installed with conductive side toward oven cavity.
Motor squeals.	1. Motor seal. 2. Motor malfunction.

BURNER TROUBLESHOOTING


START
NOTE: BEFORE TROUBLESHOOTING, FAMILIARIZE YOURSELF WITH THE SEQUENCE OF OPERATION AND SERVICE PROCEDURES AND ADJUSTMENTS PERTAINING TO THE IGNITION MODULE AND RELATED COMPONENTS.
TURN CONTROL ON AND CALL FOR HEAT
TURN GAS SUPPLY OFF
POWER TO S87 (24 VAC NOMINAL)
NO
CHECK LINE VOLTAGE POWER, LOW VOLTAGE TRANSFORMER, LIMIT CONTROL, CONTROL AND WIRING.
YES
SPARK ACROSS IGNITOR OR IGNITOR/SENSOR GAP
NO
•CHECK IGNITION CABLE, GROUND WIRING, CERAMIC INSULATOR AND GAP AND CORRECT.
•CHECK BOOT OF THE IGNITION CABLE FOR SIGNS OF MELTING OR BUCKLING. TAKE PROTECTIVE ACTIONS TO SHIELD CABLE AND BOOT FROM EXCESS TEMPERATURES.
•CHECK CONTROL FUSE. IF FUSE OKAY, REPLACE S87.
YES
MAIN BURNER LIGHTS
NO
•CHECK FOR 24 VAC ACROSS VALVE AND VALVE TERMINALS S87. IF NO VOLTAGE, REPLACE S87.
•CHECK ELECTRODES FOR CORRECT POSITION.
•CHECK ELECTRICAL CONNECTIONS BETWEEN S87 AND GAS CONTROL. IF OKAY, REPLACE GAS CONTROL.
YES
SPARK STOPS WHEN BURNER IS LIT
NO
NOTE: IF S87 GOES INTO LOCKOUT, RESET SYSTEM.
•CHECK CONTINUITY OF SENSOR CABLE AND GROUND WIRE
•CHECK THAT THE FLAME COVERS ALL ELECTRODES.
IF CHECKS ARE OKAY, REPLACE S87.
YES
SYSTEM RUNS UNTIL CALL FOR HEAT ENDS
NO
NOTE: IF S87 GOES INTO LOCKOUT, RESET SYSTEM.
•CHECK CONTINUITY OF SENSOR CABLE AND GROUND WIRE
NOTE: IF GROUND IS POOR OR ERRATIC, SHUTDOWNS MAY OCCUR OCCASIONALLY EVEN THOUGH OPERATION IS NORMAL AT THE TIME OF CHECKOUT.
•CHECK FOR EXCESSIVE HEAT AT SENSOR INSULATOR [TEMPERATURE ABOVE 1000°F (538°C) CAUSES SHORT TO GROUND].
IF CHECKS ARE OKAY, REPLACE S87.
YES
CALL FOR HEAT ENDS: SYSTEM SHUTS OFF
NO
•CHECK FOR PROPER TEMPERATURE CONTROLLER OPERATION.
•REMOVE VALVE LEAD AT S87; IF VALVE CLOSES, RECHECK TEMPERATURE CONTROLLER AND WIRING; IF NOT, REPLACE GAS VALVE.
YES
TROUBLESHOOTING ENDS
REPEAT PROCEDURE UNTIL TROUBLEFREE OPERATION IS OBTAINED.
TSP773